

55
56
57 THE ARTICULATED GLASS BLOCK
58

59 Inventor : Sam K Hurst, Maple Hts , Ohio
60

61 Int. Cl E04B 5/46
62 U.S. Cl 52/306; 49/501; 52/474
63 Field of Search 52/304, 306, 307, 52/308, 474,
64 476, 477, 49/501, 171
65

66 **References Cited**

67 U.S. PATENT DOCUMENTS
68

69 Re 24,077	Oct, 1955	Ensminger	52/209 X
70 2,667,245	Jan, 1954	Shink	52/202
71 2,835,623	5/1958	Vincent et al.	
72 2,972,783	2/1961	Russell et al.	
73 3,111,725	Nov 1963	Brown	52/204.51
74 4,023,319	May, 1977	Kurata	
75 4,058,943	11/1977	Sturgull	52/307 X
76 4,689,933	9/1977	Biro	52/475
77 4,084,361	Apr., 1978	Aspaas	49/501X
78 4,433,517	Feb., 1984	Moore, Jr	52/204.55
79 4,447,985	May, 1984	Weber et al	49/501X
80 4,628,652	Dec., 1986	Wefels	49/501X
81 4,831,804	5/1989	Sayer	52/475
82 4,843,772	7/1989	Lisa et al.	52/308
83 4,949,506	8/1990	Durham, Jr	52/475
84 4,986,048	1/1991	McMarlin	52/306
85 5,014,471	5/1991	Ballstadt	52/308 X
86 5,042,210	8/1991	Taylor	52/307
87 5,079,886	1/1992	Downs	52/308
88 5,187,909	2/1993	Olson	52/210
89 5,511,352	4/1996	Sholton	
90 5,675,948	Oct. 14, 1997	Boesch	
91 . 20020096266			
92 2001/0002525 .			
93 Re 24,077	Oct, 1955	Ensminger.	
94 2,667,245	Feb., 1961	Russell et al.	

95 Foreign Patent Documents

96 1912628 Mar., 1965 DE.

98 Other References Four pages from the 1992 edition of Sweet's Catalog. Architectural Record's
99 Product Report, p. 71, Dec. 1991 issue.

100

101

102

ABSTRACT

103
104 For patenting purposes, this application uses Provisional Patent Application Number 60/429,527
105 and its filing date of November 26, 2002 to backdate this application. A functional glassblock
106 window comprised of glass blocks join in symmetry within a framework of sectional sashes that
107 join mechanically to form one integral panel that of an appropriate size for the desired opening.

108
109

110 THE ARTICULATED GLASS BLOCK

111 Description

112
113

114

115 BACKGROUND OF THE INVENTION

116

117 1. Field of the Invention

118
119

The present invention is directed generally to the art of building construction and more specifically to operable windows used in building construction.

120

121 2. Description of the Invention Background

122

Glass blocks are used widely throughout the world especially in Europe. Today innovation has moved glass blocks beyond window replacement industry which for decades its use was exclusively for partitions and windows in buildings of all kinds. Glass block windows offer a variety of advantages over conventional, casement windows. For example, glass block windows have been widely used for protection against vandalism or break-ins. Glass blocks windows also offer protection against the elements, especially high winds. Traditional windows are easily compromised by projectiles a loft due to the high winds. Because glass block windows are comprised of a plurality of glassblock interconnected to form a wall. During high wind events, it is possible for a projectile to compromise one block without effecting surrounding the blocks.

131

Glass block windows may be constructed using cement or silicon permanently connecting a number of glass blocks together to form a panel of an appropriate size for the desired opening. The panel of blocks are joined using the like to the opening. It is precisely because of that rigid, permanent, panel construction that many of the above-identified advantages are possible. It is because of that permanently fixed attachment of the panel to the surrounding structure that glass block windows suffer from a number of disadvantages.

138

139 Due to fixed glass block window not opening a glass block window, fire codes may prohibit their use particularly when there is only one window in a room and no other safe fire escape is available as proscribed by law. Additionally, the inability to open a glass block window it obstructs nature airflow from outside to the inside. Although vents can be installed in a glass block window, they interfere with the aesthetic value of the glass block window. Glass block windows are constructed using cement or silicon permanently connecting a number of glass blocks together to form a panel make it difficult to replace a broken block. Technological advancements in the window industry have fostered more energy efficient window systems. The basic design of glassblock windows have not changed for decades.. Finally, because of the fixed attachment of the panel to the surrounding structure, it is impossible to clean the outside of the glass block window from the interior of the structure.

149

150

Thus, the need exists for a glass block window, which is capable of functioning as a traditional operable window while retaining the desirable features of a glass block window.

. This device like application no. 20020096266 and patent no. 5,675,948 will use a vent that will be introduced to the network in order to allow ventilation. However, unlike these two devices they will not be a part of fixed window assembly they can be removed. Like patent application no, 2001/0002525 and pat. No. 5,511,352 the glass blocks themselves will allow movement to provide an opening for ventilation. However, in both of these models, the assemblies are very heavy and hard for operators to use. The place the weight of the entire assembly on hinges placed on the sides or side of the window. My design like patent 5,511,352 makes available the entire window opening for use unlike 5,675,948 that limits airflow to a vent in the size of two glass blocks. My design is superior to both designs in that it uses basic physical principles to its benefit.

The window assembly will be effort free design that provides the user the flexibility of casement window system. Using sliding arms mounted perpendiculars to load bearing walls, extend the wall's ability to hold up or leverage the weight of the blocks and provide lateral motion. The user only task is to collapse the support at the side of column closest to the windowsill. Push the column toward the collapsed support in order to create enough separation to rotate the column to the side. Then user pushes and turn in sequence the columns toward the windowsill. Creating a opening in the center of the opening .

THE SUMMARY OF THE INVENTION

The Invention consists of glass blocks assembled in distinct and uniform subset of columns. The columns or sectional sash units are distinct individual systems of connected blocks. Columns can vary in composition and size but one thing remains constant wither upright or side ways because most glass blocks are square they form rectangular. The invention has one essential features one is that the columns or rows are supported entirely by a retractable arm/slide cantilevers. The cantilevers are anchored to load bearing structure in order to offset the weight of the assembly. However, it will be clear to those of ordinary skill in the art that the present invention could be embodied in other types of window using this basic element as their under pinning.

One embodiment would place sectional sash units suspended between a tandem of telescoping cantilevers. The cantilevers will be mounted on a load bearing wall within a cabinet or pocket within the wall adjacent the window. The cantilever extends from the cabinet to the opening. The door to the cabinet is opened a door that serves as a opening jamb is unlocked and opened into the cabinet or wall pocket. The sectional suspended between the telescopic or slide cantilever are pushed towards the pocket. The sectional unit are turn side ways and force into the pocket, collapsed one on another. The jamb is then closed and a opening is revealed. A second design would mount the cantilevers to the mouth of the opening to either side to side or top and bottom. A means to rotate will be incorporated in most designs joined between the cantilevers and the sectional units. The means to rotate will allows the unit to rotate up to 90 degrees. The user in this would pull the key sectional unit toward themselves clearing of the sweep edge or jamb. The sectional units rotate the unit sideways 90 degrees Then pushes the unit back in place. The other sectional units move linear along a single plane to the side or open down. as the sectional units separate the user turns the

199 sectional unit 90 degrees and to the side one section collapsed to the others inside the windowsill
200 along the jamb.

201
202 The present invention is directed to an operable glass block window comprising a window frame
203 sized for insertion into an opening in a structure. The window sash assembly provided is divided
204 into sectional components each carries a plurality of glass blocks. There are two types of
205 embodiments on that positions a revolving fixture between the sectional components and those that
206 fix the cantilever directly to the sectional sashes. Embodiments one the sectional sashes a move
207 relative to the revolving fixtures and cantilevers . Embodiment two the sectional sashes move
208 relative to the cantilevers.. In one embodiment of the present invention, the sashes are capable of
209 moving to the left and right of the frame into a wall pocket.
210

211 The operable glass block window of the present invention provides the advantages of
212 traditional fixed and other operable, glass block windows. That is, the glass block window of the
213 present invention provides protection against vandalism as well as break-ins. The glass block-
214 window of the present invention provides excellent protection against hurricanes and other gale
215 force winds. The glass block-window of the present invention is serviceable , replaceable and
216 adaptable and repairable. Glass block windows constructed according to the teachings of the
217 present invention in combination with other technology is more energy efficient and reduce the
218 transmission of noise from the outside to the interior of the building then traditional and other
219 operable windows..
220

221 Because the glass block windows of the present invention are capable of being opened, they
222 provide the required fire exits and, thus, their use is not prohibited by fire codes. Because the glass
223 block window can be fully opened to a position where the window sashes move to the side pockets
224 adjacent the opening maximum ventilation is achieved. Additionally, the ability to open the window
225 to such a degree allows easy access to the outside of the window from the inside of the room for
226 convenient and safe cleaning. Those, and other advantages and benefits of the present invention,
227 will become apparent from the Description of a Preferred Embodiment here in below.
228
229
230
231
232
233

234 BRIEF DESCRIPTION OF THE DRAWINGS 235

236 Fig.1 shows a the perspective of a glass block fig 2 shows a perspective of a column of
237 glassblock Fig 3 a rendering of an adaptable integrated telescopic arm and lazy suzan Fig 4 Shows
238 the glide plate Fig 5 illustrate the strap holding the column of blocks together. Fig 6 shows the gate
239 in the windowsill. Fig 7 illustrates a type of gate locking mechanism. Fig 8 shows the wall pocket
240 Fig. 9 shows the access panel to the windowsill and wall pocket .Fig 9 shows a type of locking
241 mechanism for the access panel door. Fig 10 shows how telescopic arm is mounted cross to wall
242 bearing member for the window. Fig 11 illustrates the window closed Fig 12 illustrates the gate
243 incorporated into the windowsill opening Fig 13 illustrates the arm retraction into wall pocket via a
244 open access panel and windowsill gate Fig 14 illustrates the columns using lazy suzan turning to on
245 side. Fig 15 illustrates all the columns collapsed upon one another within the wall pocket. Fig 16
246 shows the window gate closed to the pocket and a screen replacing the glass blocks

247

DESCRIPTION OF THE PREFERRED EMBODIMENT

249

250 The glass block window assembly is comprised of plurality of sectionals sash units that join
 251 mechanically to form a complete glassblock sash panel sealing an opening. The sectional of a sash
 252 can be constructed of silicone or cement sandwiched between the blocks that are capped with a rigid
 253 mounting fixture. The means to revolve devices are cantilevered between a tandem of two parallel
 254 cantilevers that project

255

256 The trunk of the means to project is recessed or collapsible mounted to a support wall/ member.
 257 In some applications, the cantilever and means to revolve are joined into one integrated structure
 258 that can be inter-locked with other like fixtures that incorporates smaller into greater and greater
 259 into even greater is repeated until the configuration fits the opening. This design allows multiple
 260 units of fixture to be interlocked to fit any application. The custom configurations are interlocked
 261 via a glide plate, float medium inter-connector mounted between the hollow box tubes, or other like
 262 dynamic medium mounted concentrically. The glide plate allows the interlocked tubes to glide
 263 independent of one another. Very heavy robust assemblies may use a crossbeam that traverses the
 264 opening to increase the load bearing ability of the assembly. The cantilever is ferried across the
 265 cross member. The sash sectional will be mounted between a top and bottom telescoping
 266 assemblies. The assembly may use two opposing units mounted on either side of the window. The
 267 recessed arms extend out from a pocket within that wall. The pocket is sized to accept the collapsed
 268 sectional units. The gate that serves as the opening's jamb is found unmolested between the upper
 269 and lower arm. The closed gate serves as the opening's jamb. So when the arm is fully extends and
 270 the sectionals are snugly rest against the window jamb. The gate hinged to the outside wall can be
 271 open and closed by a to the pocket away from the column. The open gate collapsed against the
 272 outside wall of the pocket serves as a gateway to the pocket. The columns moving along with the
 273 arm is pushed into the pocket closest column first. In some embodiments, the columns will only
 274 exhibit only one plane of motion. The face of the column is fixed. The motion of the column is
 275 limited to that of the extended and then contracted arm. The side to side motion of the individual
 276 columns is similar to sliding motion of panel's make up a curtain.

277

278 In other embodiments sandwiched between the column and the cantilever is a rotational base
 279 that revolves clockwise and counterclockwise. Space is created between the contacted and
 280 extended arm. This assembly design allows columns to fill the pocket side ways decreases the depth
 281 needed to house the column. This embodiment closely mimics the behavior of a curtain. The panel's
 282 folds one on to another allowing compression surface area. An access door is mounted
 283 perpendicular to the windowsill door that door is design to reveal area just after the windowsill door
 284 and the entire pockets. The open access panel to allow total accesses to all sectionals and window
 285 jamb gates. The user can push the sectionals, closest column in and farthest out. Once the arms are
 286 extended and the sectional s situated into position, the shut gate then becomes the jamb. This action
 287 is repeated on the other side, in this application the lead edges of the outermost columns meet in the
 288 middle to form a kinetic seal.

289

290 The user opens the access panel then they open the gates to the window jamb. The user then
 291 moves the columns closest to the open gate toward the pocket while turning the sectionals 90
 292 degrees to a stop. This action is repeated until all the sectionals are collapsed into their adjacent wall
 293 pockets. An opening is then revealed making way for a screen or egress in the case of an
 294 emergency. This same application can be used for accordion doors made glass blocks.

295
296 This system can be mechanized. A safety screen can be inserted in place of the block panel allowing
297 natural airflow. The security screen is comprised of security bars sandwiched between a tradition
298 screen. The simplicity of this system makes it is a common sense approach to add functionality to
299 glass block walls.

300
301
302
303
304 CLAIMS
305
306

307 1. What is claimed sectional sash units come together to form a whole sash panel
308
309 (a) a row is defined as a sash comprised of a tier of blocks poised symmetrically horizontal
310 a column as vertical
311 (b) a complete panel sized to fit a specific opening is constructed when either a plurality of
312 columns or rows draw to a union
313
314 (c) the sectional sashes can be constructed using of silicone or cement sandwiched between
315 the blocks the are capped with a rigid mounting fixture
316 (d) the blocks can be inserted into oblong shaped grate which locking cross ties that grasp
317 hold the flat area between the lips of the glassblock.; The grate is serviceable, strong,
318 alterable, adaptable and replaceable
319
320 2. What is claimed the cantilever supports the sectional units
321 (a) a means rotate is incorporated into the cantilever design revolves 90 degrees to a stop
322 (b) the cantilever uses means of incrementally increasing height and width and of equal
323 length joined by glide plate inserts ,the fixtures forms an accordion like cantilever
324 (c) at equate distant points along the cantilever revolving plates are joined to the sectional
325 sashes .
326 (d) the cantilevers provide the medium for the projection , retraction and rotation of the
327 sectional sashes
328
329 3. What is claimed a means of storage
330
331 (a) sweep jamb/gutter can be collapsible or fixed, a fixture that fills the space between the
332 jamb or gutter equal to distance needed for the sectional sash to rotate freely
333 (b) sweep jamb length is that of the enact sash the width is that of the sash the height is
334 equals the minimum distance needed to rotate the sectional closest to it without hitting
335 the window jamb or gutter
336 (c) fixed applications the sectional is pulled away a distance a from the fixture
337 (d) the cantilever can be attached directly to the mouth of the opening,
338 (e) sashes are attached via branches that form means of rotating , cantilever collapsed
339 against the openings jamb with the attached sectional units
340 (f) countersunk cantilevers can extend from the pocket to the opening, the sashes travels in
341 relationship to the cantilever and its attachments

342 (g) the wall pocket is adjacent the opening. The operator opens the access panel to the wall
343 pocket then the gate that serves as jamb. Then push the sectional sashes through the gate
344 into the pocket. Shut the gate behind the last section.

345
346 Though the present invention was shown and described with references to the preferred
347 embodiments, various modifications thereof will be apparent to those skilled in the art and,
348 therefore, it is not intended that the invention be limited to the disclosed embodiments or details
349 thereof, and departure can be made therefrom within the spirit and scope of the appended claims.
350